

REMARKS

The Applicants request reconsideration of the rejection.

Claims 1-20 are pending.

Claims 1, 2, and 12-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Salvatore, et al., U.S. 2002/0131466 in view of Murai, et al., "Lasing Characteristics under High Temperature Operation ..." (Murai). The Applicants traverse as follows.

A key feature of the presently claimed invention is the InGaAsP layer, which includes a grating as shown in Figs. 1, 4A and 4B of the present invention. This grating is not a floating-type grating of the type shown in Fig. 2 of Salvatore; note "Bragg grating 20" and the spacing 52 between the grating and the upper carrier confinement layer 36.

On the other hand, in the present invention, the concave depth of the grating included in the InGaAsP layer is smaller than a maximum thickness of the InGaAsP layer. Further, there is no spacing layer such as the layer of Salvatore mentioned above. The grating of the present invention is not a floating-type grating.

In the floating-type grating, a band structure exists as shown in Figs. 10A and 10B of the present application. Fig. 10A shows the band structure in cross section taken along line P-P', that is, corresponding to a convex portion of the grating, while Fig. 10B shows the band structure in cross section taken along line Q-Q', that is, corresponding to a concave portion of the grating.

As discussed in the present specification, in the P-P' cross section, p-type carriers move to low band gap places, resulting in notches being formed. Meanwhile, there is no notch in the Q-Q' cross section. Accordingly, since the current flow escapes the bars of the grating layer as indicated with an arrow, the equivalent current flow area is halved, which raises the resistance. See, for example, Page 8, lines 2-10.

To strengthen the recitation of the grating structure so as to distinguish it from a floating-type grating, the independent claims have been amended following a helpful suggestion from the Examiner. Thus, each independent claim is now limited by requiring that the grating have alternating concave parts and convex parts, the concave parts having a concave depth terminating in a continuous portion of the grating, such that the concave depth of the grating is smaller than the maximum thickness of the

InGaAsP layer. It is believed that agreement was reached during an office interview that this language fully distinguishes Salvatore, whether taken individually or in combination with Murai. However, if there has been a misunderstanding about the agreement, the Applicants' representative requests a telephone call from the Examiner before a final Office Action is mailed.

In view of the foregoing amendments and remarks, the Applicants respectfully request reconsideration of the rejection and allowance of the claims.

Respectfully submitted,


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